QOΓVO

ACT43750 Customer GUI

Description

This document shows basic guidelines to use Qorvo's ACT43750 EVK Graphical User Interface software (GUI). This GUI operates from a Windows-based PC with a Qorvo's USB-to-I2C dongle and allows the user to control the EVK by writing to its internal registers.

Reference Documents

For more detail information, refer to the documents below, or contact customer.support@qorvo.com.

1. ACT43750 Data Sheet.
2. ACT43750 Register Definition Application Note.
3. ACT43750 EVK User Guide

USB-to-I^{2}C Dongle

Qorvo's USB-to-I2C Dongle connects to the ACT43750 EVK through a 4-wire cable with a 4-pin connector at each end. The black wire is ground, last is an ID0 digital output pin will be used for Vdrain PWM Control and should be oriented as shown in **Figure 1**. After the set-up steps are complete, the GUI will be able to control the ACT43750 EVK via this dongle.
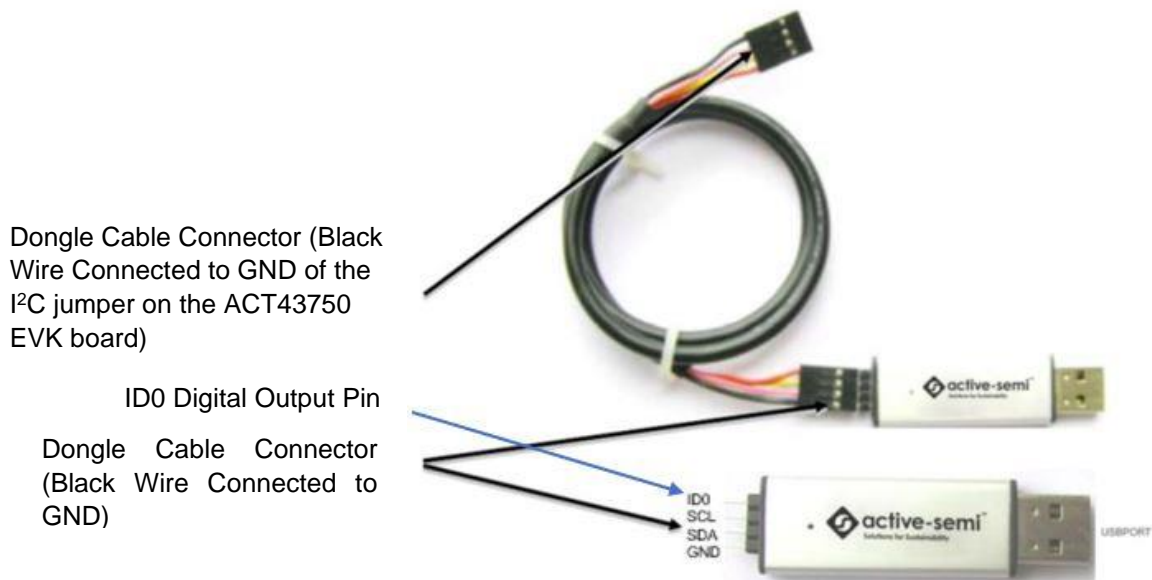
Dongle Cable Connector (Black Wire Connected to GND of the I^{2}C jumper on the ACT43750 EVK board)

ID0 Digital Output Pin

Dongle Cable Connector (Black Wire Connected to GND)

Figure 1: USB-to-I^{2}C dongle

Setup

1. Install the Qorvo's USB-to-I²C dongle's driver by following the guide in "Qorvo's GUI and Dongle Driver Installation Rev2.0.pdf".
2. Plug the dongle into a USB port of the PC.
3. Double click the "ACT43750 Customer GUI RevX.x.exe" to Open the GUI. The GUI will ask if the Dongle driver is not installed, please click Yes button to automatically install driver. The "dongle recognition" icon shows up to let user the dongle is ready to use.
4. Supply voltage to VIN12 and V50_HP34 pin (refer ACT43750's datasheet) on the ACT43750 EVK. Use a multimeter to ensure the EVK starts up properly and provides the correct output voltages. Connect the I2C cable to the I2C connector on the ACT43750 EVK.
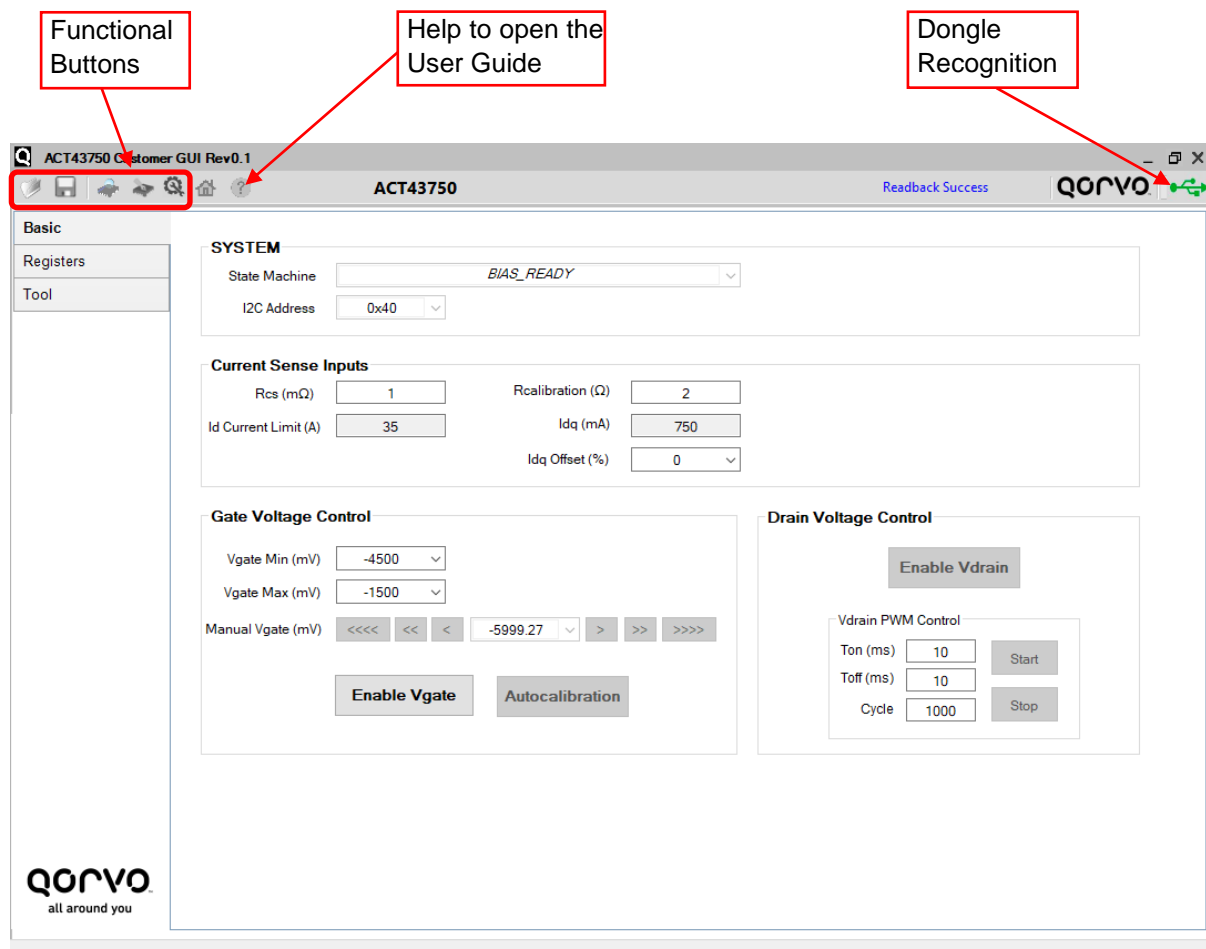

Figure 2: GUI in Basic Mode

GUI Operating Functions

Figure 2 above shows the GUI's 4 functional buttons as icons on the top left corner. Moving from left to right, these are: Open, Save, Read, Write.

Open Function

The Open function opens an ACT43750's register information data (.iact) or (.cmi) files from the computer. The file should be either provided by Qorvo or saved by the same software previously. This loads the file's register settings into the GUI. Note that this does not load the register settings into the ACT43750.

Save Function

The Save function saves the GUI's register information to a (.iact) file on the computer. Note that this does not save the ACT43750 register settings into the file. Qorvo recommends saving the IC's original register settings to a (.iact) file before implementing any adjustments.

Read Function

The Read function reads all the IC's register values and shows them in the GUI. Qorvo recommends clicking the "Read" button after powering up an EVK to ensure that the IC's settings are properly transferred into and displayed properly in the GUI. Qorvo also recommends performing a "Read" function immediately after a "Write" function to ensure that the data was properly written to the IC.

Write Function

The Write function transfers all the GUI settings to the IC. Note that any changes to the GUI settings are not transferred into the IC until the "Write" button is clicked. Note that data written to the IC using the "Write" function is volatile. The IC's register settings change back to their default settings when power is cycled.

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Basic Mode

Detailed Functional Buttons:

- Enable Vgate (Disable Vgate)

Set bit EN_REGG to 1 if enable Vgate or set bit DIS_REGG to 0 if disable Vgate then readback state of the device.

- Autocalibration

Find the optimal gate bias voltage after the user set up necessary parameters of Vdrain and Vgate then apply to the RF PA. Vgate value found will automatically overwrite on the manual Vgate combo box.

- Enable Vdrain (Disable Vdrain)

Set bit EN_DSW50 to 1 if enable Vdrain or set bit DIS_DSW50 to 0 if disable Vdrain then readback state of the device.
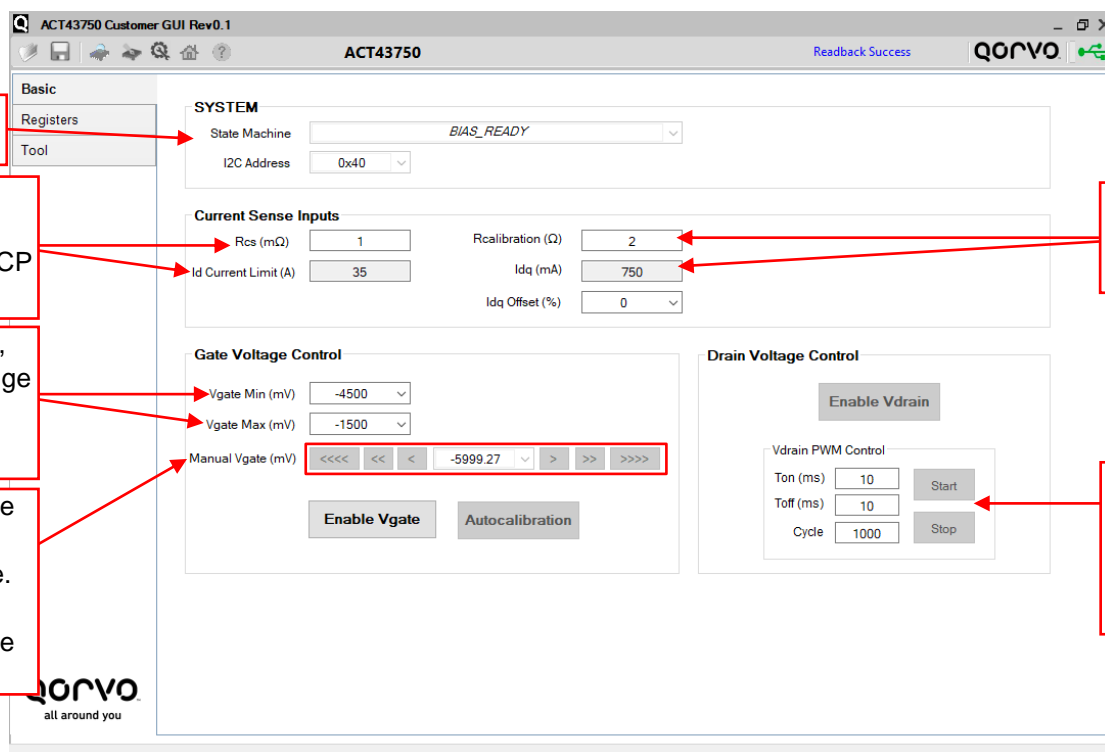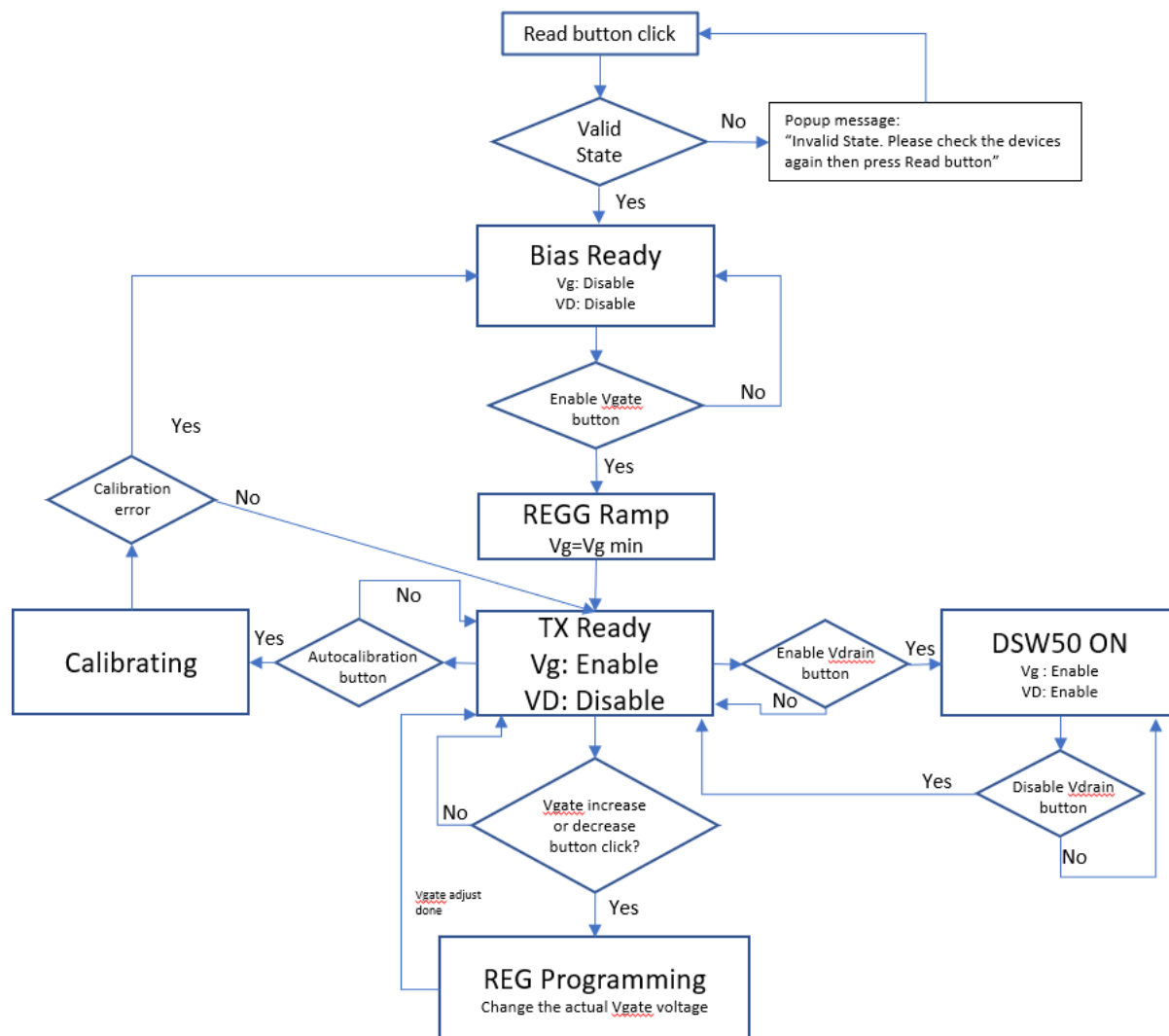

Figure 3: Basic Mode

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Flow Chart

Figure 4: Flow chart

ACT43750 Customer GUI

Registers Mode

The Register tab shows the actual register values required to achieve a desired setting. This tab is useful for debugging customer firmware. Click the "bit name" button to flip the bit value between "0" and "1" as shown in **Figure 5**. Refer to the latest ACT43750 datasheet and register definition for each bit's functionality. The user should have a full understanding of each bit/register function prior changing it while the EVK is in operation.

Note: Remember that changes to the GUI settings are not transferred into the IC until the GUI's "Write" button is pressed.
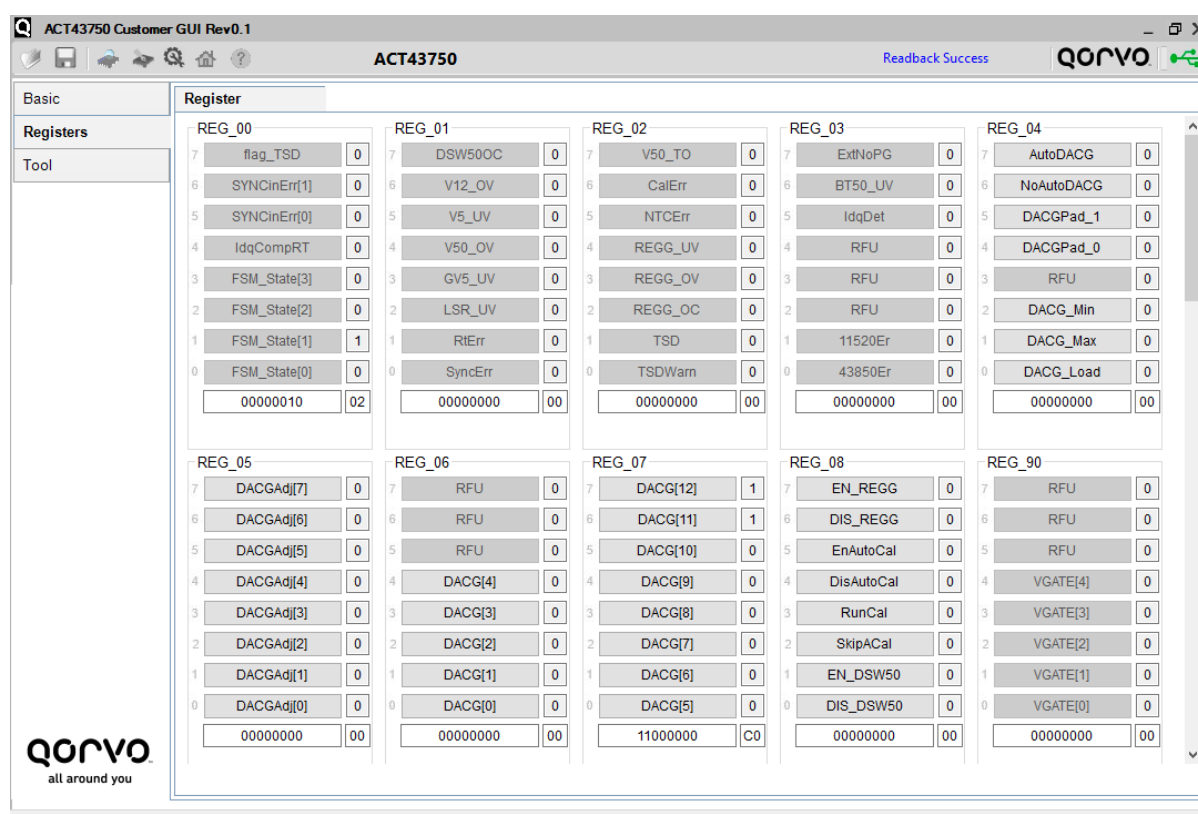

Figure 5: Registers mode.

Revision history

REVISION	DATE	DESCRIPTION
0.1	Dec-2022	Initial Released

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:
Web: www.qorvo.com
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